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| 10/574,907      | 04/25/2007  | Toru Nishimura       | 0425-1253PUS1       | 7128             |

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| EXAMINER |
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QIAN, YUN

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| ART UNIT | PAPER NUMBER |
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1793

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/574,907 | <b>Applicant(s)</b><br>NISHIMURA ET AL. |  |
|                              | <b>Examiner</b><br>YUN QIAN          | <b>Art Unit</b><br>1793                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 28, 2009 has been entered.

Claims 1-10 and 12-16 remain for examination. Claims 1 and 10 have been amended.

Claim 11 is previously canceled.

### ***Note on the Grounds of Rejection***

In this office action, the ground(s) rejection has been modified to address the currently amended claims (in which property limitation have been newly added) and those directly or indirectly dependant thereon. The rejection is substantially the same as generally set in the office action mailed on June 1, 2009.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 8, "the intermediate ..." lacks antecedent basis. There is no previous mention of an intermediate reaction product. Appropriate correction is required.

In claim 10, line 6, "the intermediate ..." lacks antecedent basis. There is no previous mention of an intermediate reaction product. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 and 8-9 are rejected under 35 U.S.C.103 (a) as being unpatentable over Mizumoto et al (US 4,631,263).

Regarding claim 1, Mizumoto et al teaches a water-repellent catalyst and a method of making by impregnating a solution of catalytically active noble metal with a polytetrafluoroethylene carrier. The resulting catalyst can be cut into sheets (10 cm wide, 210 cm long) (col. 6, lines 9-10).

The thickness of catalytically active component taught by Mizumoto et al is from 50  $\mu\text{m}$  to 50  $\text{\AA}$ , the gas permeability is not lost (col. 3, lines 35-39, and claim 3).

Furthermore, Mizumoto et al. states “when the water-repellent catalyst of this invention is used, it become possible that the gas passes not only over the surfaces of the catalyst but also through the **interior** of the catalyst and, accordingly, three-phase interfaces are easily formed, and the rate of reaction can be increased.” (col.2, lines 27-32, emphases is added by Examiner). Therefore, effectively utilizing the catalysts can be achieved.

Although Mizumoto et al. does not specifically disclose the pore volume ( $\text{mL/m}^2$ ) of the catalyst, he teaches the porous carrier (polytetrafluoroethylene) having a mean pore size of 0.1 to 10  $\mu\text{m}$  and a porosity of 50 to 95% (claim 1).

Since the catalytically active component is coated on the outer surface of the support material, it would be obviousness that the particle sizes of the powdery

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catalysts (containing 50% wt of active metal oxide on the synthetic zeolite) is bigger than the pore volume of the supported carrier.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the film-type catalyst taught by Mizumoto et al. in the process of Yokota, motivated by the fact that Mizumoto et al. discloses that such film-type catalysts provide improved gas ( $H_2$ ) permeability and thus lead to better catalytic efficiencies (abstract, and col. 5, lines 15-16).

Regarding claims 2-3 as discussed above, the film-type catalyst taught by Mizumoto et al. comprises copper, and have a thickness of 50  $\mu m$  to 50  $\text{\AA}$ . It is fixed on the surface of a substrate(claim 3)..

Regarding claims 4 and 8, since the film-type catalyst taught by Mizumoto et al. has a thickness from 50  $\mu m$  to 50  $\text{\AA}$ , it is considered a metal film is coated on the surface of another metal film (substrate).

Regarding claim 5, the ratio of the active metal to the total weight of carrier (synthetic resin, polytetrafluoroethylene) taught by Mizumoto is 0.1 to 10%wt (claim 1). Such ratio is considered to be a result effective variable because, it is well understood that the catalytic efficiencies is based on the surface area of the active metal, metal particle sizes and surface area of the support material. So the skilled artisan would have determined the optimal amount of catalyst loading onto to the carrier, based on the above considerations though routine experimentation in the art. Particular in view of the fact that:

“The normal desire of scientists or artisans to improve upon what is already generally known provides the

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motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claims 6, Mizumoto et al discloses the carrier for the film-type catalyst comprising polytetrafluoroethylene (thermosetting polymer) (col. 3, lines 5-19).

Regarding claim 9, the support members taught by Mizumoto et al. are metallic nets, such as a fine-wire net, a lattice form plate. It encompasses the instant claims (FIG. 5, col. 3, lines 52 to col.5, lines 25).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizumoto et al. as discussed above, in further view of Nishino et. al. (JP 55-149355).

Regarding claim 7, although Mizumoto et al. does not specially teach including a phenol resin as per applicant claim 7, Nishino et al teaches a process of making a phenol resin supported oxidation catalyst. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute polytetrafluoroethylene of Mizumoto with phenol resin of Nishino. As both materials are equivalent used as catalyst support material, having good refractoriness, pertains excellent strength against compression force, it would have a reasonable expectation of success. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 10 and 12-16 are rejected under 35 U.S.C.103 (a) as being unpatentable over Yokota et al. (US 4,625,063) in view of Mizumoto et al (US 4,631,263).

Regarding claims 10, Yokota et al. teaches a process of production a tertiary amine from an alcohol or an aldehyde and a primary or second amine, catalyzed by a powdery catalyst (the molar ratio of Cu: Ni: Ru=4:1:0.01) (Abstract, [0069] and claim 1).

However, Yokota et al. fails to teach further converting the powdery catalyst to a film-type catalyst as per applicant claim 10. Mizumoto et al teaches a method of making water-repellent catalyst by impregnating a solution of catalytically active noble metal with a polytetrafluoroethylene carrier. The resulting catalyst can be cut into sheets (10 cm wide, 210 cm long) (col. 6, lines 9-10).

The thickness of catalytically active component taught by Mizumoto et al is from 50 um to 50 Å, the gas permeability is not lost (col. 3, lines 35-39, and claim 3).

Furthermore, Mizumoto et al. states “when the water-repellent catalyst of this invention is used, it become possible that the gas passes not only over the surfaces of the catalyst but also through the **interior** of the catalyst and, accordingly, three-phase interfaces are easily formed, and the rate of reaction can be increased.” (col.2, lines 27-32, emphases is added by Examiner). Therefore, effectively utilizing the catalysts can be achieved.

Although Mizumoto et al. does not specifically disclose the pore volume (mL/m<sup>2</sup>) of the catalyst, he teaches the porous carrier (polytetrafluoroethylene) having a mean pore size of 0.1 to 10 um and a porosity of 50 to 95% (claim 1).



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Since the catalytically active component is coated on the outer surface of the support material, it would be obviousness that the particle sizes of the powdery catalysts (containing 50% wt of active metal oxide on the synthetic zeolite) is bigger than the pore volume of the supported carrier.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the film-type catalyst taught by Mizumoto et al. in the process of Yokota, motivated by the fact that Mizumoto et al. discloses that such film-type catalysts provide improved gas (H<sub>2</sub>) permeability and thus lead to better catalytic efficiencies (abstract, and col. 5, lines 15-16).

Regarding claims 12-13 as discussed above, the film-type catalyst taught by Mizumoto et al. comprises copper, and have a thickness of 50 um to 50 Å. It is fixed on the surface of a substrate (claim 3).

Regarding claims 14-15, since the film-type catalyst taught by Mizumoto et al. has a thickness from 50 um to 50 Å, it is considered a metal film is coated on the surface of another metal film (substrate).

Regarding claim 16, the support members taught by Mizumoto et al. are metallic nets, such as a fine-wire net, a lattice form plate. It encompasses the instant claims (FIG. 5, col. 3, lines 52 to col.5, lines 25).

### ***Response to Arguments***

#### ***With regards to the previous Grounds of Rejection***

Applicants filed Remarks on October 27, 2009 is acknowledged.

The claims 1 and 10 are amended further with property limitations. However since the references, as combined, teach all of the claimed film-type catalyst, thickness and pore volume, the physical properties of the film-type catalyst would necessarily follow as set forth in MPEP 2112.01(II).<sup>1</sup>

As such, the previous rejection stands as set forth in the office action mailed on June 1, 2009.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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<sup>1</sup> "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENZO/  
Supervisory Patent Examiner, Art Unit 1793

/YUN QIAN/  
Examiner, Art Unit 1793